



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,921	09/29/2006	Junichi Takashima	071858	5295
38834 7590 06/01/2010 WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP 1250 CONNECTICUT AVENUE, NW SUITE 700 WASHINGTON, DC 20036				
EXAMINER RODEE, CHRISTOPHER D				
ART UNIT 1795		PAPER NUMBER		
NOTIFICATION DATE 06/01/2010		DELIVERY MODE ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentmail@whda.com

### Office Action Summary

**Application No.**

10/594,921

**Applicant(s)**

TAKASHIMA ET AL.

**Examiner**

Christopher RoDee

**Art Unit**

1795

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 April 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,5,7-9 and 12-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,7-9 and 12-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 27 April 2010 has been entered.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-3, 5, 7-9, and 12-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The instant claims have been amended to specify the surface roughness of the polymerization container as 1.0  $\mu\text{m}$ . The specification as originally filed discloses on page 26 a surface roughness of 1  $\mu\text{m}$ . The same disclosure is present in original claim 6. The claims as currently presented require accuracy for the measurement of surface roughness not originally embraced by the specification. The specification was clear that surface roughness measurement was accurate to only a single significant figure. The claims as

now presented require two significant figure accuracy. There is nothing in the specification as filed to show that applicant considered such a level of accuracy.

The claims as presented are not described by the specification and contain new matter.

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 2, 5, 7, 9, 12-15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,968,705 to Yamada *et al.* in view of JP 11-269204.

This rejection was presented in prior Office actions, but is reapplied with additional analysis pertinent to the amended claims as presented below.

Yamada teaches a process for forming a polymerized toner where an aqueous dispersion of polymerized monomer, colorant, and an initiator are formed into droplets that are maintained at a temperature lower than a target polymerization temperature by about 10 to about 40 °C, a step of raising the temperature of the dispersion at the rate of about 1 to about 20 °C an hour to a temperature lower than the target polymerization temperature by about 5 °C, and a step of raising the temperature of the dispersion at the rate of about 3 to about 10 °C an hour to the target polymerization temperature, whereby the polymerizable monomer component is polymerized (Abstract; col. 1, l. 64 – col. 2, l. 11; col. 3, l. 39-43; col. 23, l. 22-28; col. 24, l. 21-34; col. 24, l. 66 – col. 25, l. 19). A dispersant is used in the aqueous medium, which is a metal hydroxide (col. 2, l. 47-57). The dispersion temperature is maintained at a temperature  $\pm 5$  °C of the desired temperature when the composition is within 5 °C of the target temperature, and the temperature of a jacket around the reactor is also controlled (col. 25, l. 27-34). The

produced toner has a volume average particle diameter of 1 to 20  $\mu\text{m}$  with a  $dv/dn$  ratio of not more than 1.7 (col. 25, l. 50-57).

Example 1 presents a specific formulation where the aqueous dispersion of styrene-containing monomer composition was charged in a polymerization reactor with agitator. The obtained aqueous dispersion of monomer composition was raised from room-temperature to 80 °C at an average rate of 50 °C /hr, from 80 to 85 °C at an average rate of 10 °C /hr, from 85 to 89 °C at an average rate of 7 °C /hr, and was held at the target polymerization temperature of 90 °C. See Figure 1.

The average rate of temperature increase in Example 1 from room temperature to a temperature 5 °C less than a target polymerization temperature is about 37.5 °C/hr. This value is calculated based on the disclosure in the Yamada that the temperature was raised from room-temperature to 80 °C at an average rate of 50 °C /hr and was raised from 80 to 85 °C at an average rate of 10 °C /hr. Assuming room temperature of about 25 °C, the composition took 1.1 hours to raise in temperature from 25 °C to 80 °C and then 0.5 hours to raise from 80 to 85 °C. The total temperature change of 60 °C took 1.6 hours. This equates to a temperature heating rate of about 37.5 °C.

The instant claims do not specify that the rate of temperature change to raise the temperature to 5 °C of the target polymerization temperature is a constant or linear rate. In fact, the specification specifically refers to the rate of temperature change as an average (see spec. p. 50). As stated there, "This aqueous liquid dispersion was heated to raise the temperature of the aqueous liquid dispersion from room temperature to 85°C at a heating rate of 40°C/hr on the average, and raise it from 85°C to 90°C at a heating rate of 15°C/hr on the average". Emphasis added. Based on this analysis, Yamada meets the requirements of the instant claims because

the heating rate on the average up to a temperature 5 °C lower than the target polymerization rate of 90 °C is within the range claimed.

Yamada does not disclose the specific of the polymerization reactor, but JP 11-269204 discloses that the inner surface of aqueous phase polymerization containers effectively have a silane polymer coating with a surface roughness (Ra) of 0.3 to 10 µm (¶ [0008]). The container is made of SUS 304, which is a stainless steel (¶ [0014]). Stainless steel is a corrosion resistant metal. This reactor prevents adhesion of material on the side of the reactor tank (¶ [0002]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a stainless steel reactor in the process of Yamada having a inner surface with a roughness within the range of the disclosure, such as 0.3 µm, because the JP '204 document teaches this reactor prevents adhesion of material on the sides of the reactor. Optimization of the surface roughness within the scope of the roughnesses taught by the JP document would have been obvious given the specifically disclosed characteristics disclosed in the JP document.

In response to the rejection as previously set forth, applicant traverses the rejection noting that the problem addressed by Yamada is different from the problems addressed by the instant inventors. Specifically, Yamada is concerned with shelf stability and fixability among other properties while the instant inventors are considered with prevention of adhesion to the inner surface of the polymerization container (see response pp. 9 & 10). However, the supporting JP document is specifically concerned with the same problem faced by the instant inventors. The JP document produces a specific polymerization container that prevents adhesion of material on the side of the reactor tank (¶ [0002]). Further, the field of endeavour and the goals of producing an effective toner by a polymerization process in a container are present in both references. It is also not necessary that the art have the same motivation as

applicant to propose a rejection under section 103. "One of ordinary skill in the art need not see the identical problem addressed in a prior art reference to be motivated to apply its teachings." *Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc.*, 76 USPQ2d 1662, 1685 (Fed. Cir. 2005). The art reasonably suggests the claimed method when Yamada and the JP reference are considered in combination.

Applicant also traverses the rejection because Yamada does not disclose the use of the material of the polymerization reactor, but applicant does acknowledge that stainless steel containers are well known in the art (response p. 11). Applicant notes that the wall surface of the stainless steel container is typically of a roughness greater than claimed and that this greater thickness gives scale after a 5 batch process (response p. 11). As it is understood by the Examiner, applicant takes the position that because scale is not obtained in Yamada, a continuous batch process was not used in its multiple trials (response pp. 10 & 11). Apparently a fresh or cleaned container was used each time. Applicant relies on the evidence in the specification to show that a 5 batch continuous process gives deteriorated conditions with a container having an inner wall with roughness of 4  $\mu\text{m}$ .

In response, the Examiner again refers applicant to the JP document, which teaches a container having a controlled roughness. This feature is taught by the JP reference as reducing adhesion of material on the side of the reactor tank. The benefit discussed by applicant appears to be disclosed or at least suggested by the supporting JP document, and this benefit is obtained by controlling the surface roughness of the container. The feature used by the claimed invention and discussed by applicant as giving reduced scaling or material deposition in the container is present in the supporting art. No unexpected result is seen as being disclosed. Further, the instant claims are not directed to a multiple batch continuous process. A single

polymerization process is disclosed and there is no requirement in the claims that multiple polymerization batches be conducted individually or continuously.

Applicant also traverses the rejection because the JP document was a material coating in the inner wall of the polymerization container, but no such material is required by the claims (see response pp. 12-14). A review of the claims shows that the inner wall roughness of the container is specified. The composition of the container is also specified. The presence or absence of a coating on the container is not specified. Consequently, the claims are open to the inclusion of any coating including the coating of the JP document. Applicant's remarks are not pertinent to the scope of the claims.

On pages 15-18 applicant addresses the heating conditions of the claimed process versus the disclosure of Yamada. These remarks are fully addressed by the additional discussion of the reference presented above where it is noted that the claims include within their scope an average heating rate. The heating rate on the average up to a temperature 5 °C lower than the target polymerization rate of 90 °C is 37.5 °C in Yamada, which falls within the scope of the instant claims.

With respect to the declaration filed under Rule 132, the Examiner has reviewed the declaration in detail. It appears that Experiment 1 in Table 1 of the specification is the modified example of Yamada. The declaration appears to address the benefits attributed to the claimed invention as compared to Yamada. Specifically, Experiment 1 of the specification was repeated except the heating rate of Yamada was used. It appears that the stainless steel polymerization container had a roughness of 0.3 µm in both the inventive and comparative example. Specific improvements with respect to scale are asserted for the inventive process because the heating process where a 5 batch process is performed.

As noted above, the heating process of Yamada's Example 1 meets the requirements of the instant claims. Yamada meets the requirements of the instant claims because the heating rate on the average up to a temperature 5 °C lower than the target polymerization rate of 90 °C is 37.5 °C/hr, which falls within the scope of the claimed range of 25 °C/hr to 50 °C/hr. Thus, the comparative example showing the heating process of Yamada is not a different invention from that claimed. The Examiner recognizes that this may not what was intended, but the claims as presented include the heating characteristics of Yamada for the reasons given above. Thus, the comparison is with something that falls within the scope of the claims.

Further, the instant claims are not directed to a 5 batch process as presented in the response and declaration. The claims include a single polymerization process. The showing is not commensurate in scope with the claims.

The Examiner notes that there is a reduction in scale for the five batch process of Experiment 1 versus Example 1, but the claims are not limited to a 5 batch process and a single batch process is included within the scope of the claims.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,968,705 to Yamada *et al.* in view of JP 11-269204 as applied to claims 1, 2, 5, 7, 9, 12-15, and 17 above, and further in view of JP 2003-287928.

Yamada and JP '204 were discussed above. The references do not disclose spraying of water on the upper interior portion of a reaction container, but the supporting JP '928 document a polymerization process using an aqueous polymerization liquid that is sprayed on the upper interior portion of the polymerization container (¶¶ [0074] – [0078]). This spray process reduces the formation of "scales" on the interior of the container during large scale production of toner (¶ [0010]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to spray aqueous polymerization liquid on the upper interior portion of the polymerization container in Yamada's process because this reduces the formation of scales or deposits of material that can fall into the liquid polymerization composition and destabilize the polymerization process.

This rejection was presented previously and is reapplied here. Applicant is understood to state that the art does not disclose the heating characteristics or at least those that would overlap with those claimed. The Examiner notes that Yamada discloses a heating process that is included within the scope of the claims for the reasons given above. Applicant does not appear to specifically disagree that the reference are not combinable for the reasons given in the rejection. Consequently, the rejection is maintained.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,968,705 to Yamada *et al.* in view of JP 11-269204 as applied to claims 1, 2, 5, 7, 9, 12-15, and 17 above, and further in view of JP 2003-277405.

Yamada and JP '204 were discussed above. The references do not disclose buff or electrolytic polishing of the interior surface of the metal container to give the desired surface roughness, but JP 2003-277405 discloses that the interior of a polymerization container can be given a desired roughness, such as an  $R_{max}$  of 0.5 to 1.2  $\mu\text{m}$ , by polishing (¶¶ [0004] & [0005]). Both buff and electrolytic polishing are disclosed (¶ [0011]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to polish the stainless steel container in Yamada to obtain a surface roughness as taught by JP '204 using buff or electrolytic polishing because the supporting JP

'405 reference teaches that these techniques are effective to give the desired surface roughness to a polymerization container.

Applicant traverses the rejection because the container disclosed by the supporting JP document is for an emulsion polymerization process not a suspension polymerization process as claimed. The Examiner has carefully considered this position but cannot agree with applicant's position. The supporting '405 document discloses a method for producing a desired roughness for a polymerization container. Whether the container is later used for emulsion polymerization or suspension polymerization is not material to the fact that the supporting '405 document teaches a method of forming a desired roughness for a container. The supporting document teaches a method of obtaining roughnesses that would be desirable in the JP '204 document. Again, the later use of the polymerization container is irrelevant.

The rejection is still seen as proper and is maintained.

Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,968,705 to Yamada *et al.* in view of JP 11-269204 as applied to claims 1, 2, 4-7, 9-15, and 17 above, and further in view of US Patent 5,958,640 to Hasegawa *et al.*

Yamada and JP '204 were discussed above and those discussions are incorporated here. The references do not disclose the formation of a shell on the toner, but Hasegawa teaches polymerized toner is effectively covered by a shell (Abstract). The polymerizable core composition having a colorant and a polymerizable monomer is polymerized in an aqueous dispersion to form the core particles and then shell polymerizable monomer is added to form the shell (col. 5, l. 50 – 67; col. 14, l. 37-47). The shell gives improved blocking resistance, good fixing ability and uniform melting ability (col. 5, l. 8-37). Useful dispersion agents for the polymerizable aqueous dispersion include metal hydroxides (col. 10, l. 22-56). The toner

particles have a volume average diameter of 0.5 to 20  $\mu\text{m}$  and a  $dv/dp$  ratio of at most 1.7 (col. 6, l. 33-48). See examples.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to polymerize a shell on the surface of the cores formed in the process of Yamada because Hasegawa teaches that the shell improves the shelf life of the toner (i.e., blocking resistance). This shell can be formed by addition of polymerizable monomer to the aqueous polymerizable composition after formation of the toner particles.

Applicant traverses this rejection because Hasegawa does not overcome the deficiencies of the primary art in disclosing or suggesting the toner preparation process claimed. However, as noted above, Yamada and JP '204 suggest the polymerization process characteristics claimed.

The rejection is still seen as proper and is maintained for these claims.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher RoDee whose telephone number is 571-272-1388. The examiner can normally be reached on Monday to Thursday from 6:00 to 4:30 Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Christopher RoDee/  
Primary Examiner  
Art Unit 1795

25 May 2010